HAZARDOUS MATERIALS INFORMATION GUIDE

(For Plant Employees)

Chemical Processors, Inc. Pier 91

SUBJECT: Petroleum Base Chemicals
Safety Information

Part I of a V part safety
program for plant employees

GENERAL PRECAUTIONS

The Chempro Pier 91 facility handles a wide variety of dangerous materials. In some cases a chemical may come in contact with your skin or clothing and you may not feel it presents a health hazard because it is not immediately painful. This is a bad practice because some chemicals take several minutes to react and other may take hours or days to produce harmful effects. Below are a few general precautions to help you work with greater safety in the plant and with more confidence that these dangerous materials don't come home with you in your car, on your clothes, or on your skin.

1. If you have any questions about the dangers of any job you are about to perform. STOP!!! Contact the manager (Ron Atwood) or the plant safety coordinator (Bob Moody) for further instructions.

2. It is a good idea to designate a couple of old pairs of pants and a shirt or two as Chempro work clothes and wear them only at work. At the end of the day change back into your street clothes. This will insure that if toxic chemicals are spilled on your clothes they will stay at Chempro and won't come home with you.

3. Always wear coveralls at work. If you spill something on your coveralls which can soak through to your work clothes remove the coveralls at once. Put them in the dirty coverall can in the change room and put on a clean pair. You should have a clean pair of coveralls for each day of the week, (7).

4. Always wear steel-toed rubber boots while working in the plant. Some chemicals found at the plant can dissolve leather boots and then react with the skin on your feet. If you spill any chemical inside your boots take them off at once and wash your feet. Consult the plant manager or plant safety coordinator to determine if you need a new pair of boots.

5. Know the location of all eye wash stations and shower stations in the plant.

6. Never enter any empty tank or any other confined area before checking for explosive gasea dn oxygen content.

7. Smoking is not permitted in the plant except in the operations office and in building 19.

8. Personal hygiene is very important at Chempro. Always wash your hands before eating and before leaving the plant. It would be a good idea to shower at the end of each work day. There is a shower located in the change room.

PETROLEUM BASE CHEMICALS

This group of oil base materials includes waste oil, the chemicals used to treat waste oil, and emulsified oil.

Waste Oil

Waste oil may be referred to as drain oil because it often comes from draining engine crank cases, or it may be called reclaim oil because it can be treated then reused as fuel oil. Other sources of waste oil can include hydraulic oil, coolant oil, transformer oil, and cutting oil. Because incoming waste oil loads are mixed together at Chempro, and one tank of waste oil will probably contain more than one of the types of oil listed above.

Hazardous Properties of Waste Oil

1. Vapors and Mists: (Combustible)

   At normal outside temperatures, waste oil vapors should not present a significant health hazard. Because waste oils are transferred from truck to tank, or vice-versa, in a closed system and because all waste oil is stored in closed tanks, very little oil vapor will escape into the air. However, during the treatment of waste oil, the oil is heated and operators may be exposed to vapors escaping from the tank vents. Exposure to these vapors may cause dizzines, headaches, nausea, and irritation to the eyes, nose, and throat. Because the composition of this vapor is unknown, there are no industrial standards regulating exposure limits. Therefore, operators should consider this material toxic and take precautions to limit their exposure to as low as possible

2. Liquid Oil: (Combustible)

   Prolonged skin contact with waste oil may lead to pimples, boils, blackheads, scaling, drying, cracking, and other skin conditions.

Waste Oil Treatment Chemicals

These include RGS, ECO, Nalco, or similar chemicals which are used in the treatment of waste oil.

The contents of these products are not identified because they are considered to be secret formulas. We receive these products in 55 gallon drums. All precautions on the drum label should be strictly followed.

Hazardous Properties of waste Oil Treatment Chemicals

RGS from the 4-Tek Company is the product most used for oil treatment. It is an irritant to skin, eyes, and nose, and has a strong ammonia-like odor. Although its' formula is unknown it should be considered toxic if swallowed. If it is splashed in eyes, rinse at once with water and contact a doctor. If spilled on skin rinse off with soap and water as soon as possible. These same basic safety rules should be applied to all waste oil treatment chemicals. Remember to read the labels to determine special hazards.

PRECAUTIONS:

Wear rubber boots, rubber gloves, coveralls, avoid skin contact, and wear an organic vapor respirator if exposed to vapors in enclosed areas. Goggles or a face shield should be worn also.

Emulsified Oil

Hazardous Properties of Emulsified Oil

Emulsified oil is a combination of lubrication oil, coolant, and water. Therefore, it is a misture of oil and other chemicals in water. Chempro receives this mixture and separates it into oil and water.

1. Vapors and Mists

   Emulsified oil is only slightly toxic in the pure form. However, Chempro receives it after it has been used and there is a good chance that it has been contaminated with toxic solvents, oils, and heavy metals. Emulsified oil should be handled like a waste oil.

   Inhalation of vapor or mist may cause irritation of the eyes, nose, and throat. Contact with eyes and skin may cause irritation.

2. Liquid Emulsified Oil

   Prolonged skin contact with emulsified oil may lead to pimples, boils, blackheads, scaling, drying, cracking, and other skin conditions. Contact with eyes may cause irritation.

PRECAUTIONS:

When working with emulsified oil vapors and mists wear a respirator with organic vapor filters. Also wear rubber boots, gloves, coveralls, and eye protection.

Emulsified oil is treated in a 5,000 gallon open top tank. Because the emulsified oil is heated to 190^{o}F during treatment, use caution when working around the treatment tank. At this temperature severe burns will result from contact with the emulsified oil.

- MISCELLANEOUS CHEMICALS -

TOLUENE:

Toluene has a number of dangerous properties. It is flammable, a narcotic, toxic, and it can absorb into the skin causing drying and cracking. Toluene also produces a vapor under normal conditions which has all of the above dangers.

Toluene is a solvent used when performing a BS&W test on oil. When working with it always wear rubber gloves and keep the room well ventillated. Do not smoke around toluene.

Waste toluene should be disposed of in an approved flammable saftey container. When the container is full it should be discharged into a waste oil treatment tank.

CLEANING COMPOUNDS:

Powdered cleaning compounds generally contain sodium hydroxide and/or potassium hydroxide (see page 5). These compounds are very corrosive and must be handled with care. They can cause severe skin burns and permanent eye damage. When using this type of cleaning compound wear rubber gloves, rubber boots, coveralls, eye protection, and a dust mask. Do not sprinkle powdered cleaners up wind of other employees.

Liquid cleaning compounds can also burn the skin and cause eye damage. Use the same precautions as you would with powdered cleaners.

HAZARDOUS MATERIALS INFORMATION GUIDE FOR PLANT EMPLOYEES

CHEMICAL PROCESSORS, INC. PIER 91

CHEMICALS USED FOR TREATING INCOMING WASTE WATER

Part II of a V part safety program for plant employees.

PART II

CHEMICALS USED FOR TREATING INCOMING WASTE WATER

This group of chemicals includes:

GROUP 1	GROUP 2
Sulfuric Acid (H_2SO_4)	Ferrous Sulfate ($FeSO_4$)
Sodium Hydroxide (NAOH)	Calcium Chloride($CaCl_4$)
Hydrogen Peroxide (H_2O_2)	Sodium Bisulfite ($NAHSO_3$)
Postasium Permanganate ($KMnO_4$)	Lime-Hydrated ($CaO-H_2O$)
	Alum ($Al_2(SO_4)_3$)

The first group of chemicals represents the most dangerous materials in the plant. Mixing any two of these chemicals can cause a fire or explosion, and spilling any of them may result in severe floor corrosion or even fire. Skin or eye contact with any of these chemicals can cause permanent physical damage.

The second group of chemicals are less reactive but still dangerous because they can react violently when mixed with chemicals from the first group. Also, they are all powder-like materials which create dust when handled. Care must be taken to avoid breathing these dusts.

HAZARDOUS PROPERTIES OF GROUP 1 CHEMICALS

Sulfuric Acid (H_2SO_4) liquid.

This is an extremely strong acid (low pH). Never mix sulfuric acid with anything except water (waste water). When mixing sulfuric acid and water always add the acid to the water. This will avoid spattering due to high temperatures.

When working with sulfuric acid always wear goggles, rubber gloves, coveralls, and rubber boots. If spilled, on clothes remove clothes at once and rinse out with large amounts of cold water.

If spilled on skin, rinse off at once with cold water. If you fail to notice the sting of sulfuric acide on your skin at first, it can burn under the skin causing great pain. Sulfuric acid burns heal slowly and infect easily. If it is splashed in the eyes, rinse with water at once for 15 minutes then call a doctor.

Sodium Hydroxide (NAOH) liquid or solid.

Sodium hydroxide is very strongly alkaline (high pH). It comes in two forms; 20% sodium hydroxide in water and solid bead in 50 pound sacks. For most purposes in the plant, we will use the 20% liquid sodium hydroxide. Never mix this with anything except water (waste water).

When handling liquid or solid sodium hydroxide always wear goggles, rubber gloves, rubber boots, and coveralls. If liquid sodium hydroxide is spilled on clothing, wash it off at once. Solid caustic may stick to clothing- remove it with a rag and wash at once. If liquid or solid caustic is on your skin you will not feel it right away, but it is important to wash at once because it can cause severe burns in less than 5 minutes. Caustic feels slippery on the skin.

Sodium Hydroxide (NAOH) liquid or solid. (Continued)

If splashed in the eyes, rinse with water for at least 15 minutes then call a doctor.

Hydrogen Peroxide (H_2O_2) liquid.

Hydrogen peroxide is a very strong oxidizer and an extremely dangerous chemical. Never mix it with anything except water (waste water). When handling hydrogen peroxide always wear goggles, rubber gloves, rubber boots and coveralls.

This chemical is so reactive, a very small amount in the eyes can blind you and skin contact will always lead to minor or major burns. In case of skin contact, rinse at once with water. For eye contact, rinse also with water for 15 minutes then call a doctor.

GROUP 2 CHEMICALS

Ferrous Sulfate ($FeSO_4$) solid.

This chemical is a grey-blue granular powder which generally comes in 50 pound bags. Mix with water or waste water only. When working with ferrous sulfate always wear a respirator with dust filters to avoid breathing the dust. Also wear goggles and gloves.

Ferrous sulfate is not very toxic but if it is spilled in eyes, on skin or clothes rinse off with water.

Calcium Chloride ($CACl_2$)

Calcium Chloride is a white flake-type material which usually comes in 100 pound bags. It should only be mixed with water and emulsified oil. Calcium chloride is toxic when swallowed so always wear a respirator with dust filters when handling it. Also wear goggles and gloves. If spilled in eyes, on skin or on clothes rinse it off as soon as you can.

Sodium Bisulfite ($NAHSO_3$) solid.

Sodium bisulfite is a white granular powder which usually comes in 100 pound bags. It is a very strong reducing agent. If it is mixed with water which has a low pH (0-4), it will produce a gas which is very irritating to the eyes, nose, throat and lungs. Check the pH before adding to water. When working with sodium bisulfite always wear a respirator with dust filters to avoid breathing the dust. Also wear goggles, gloves and coveralls. In case of skin contact rinse off with water when you get a chance. For eye contact rinse eyes with water at once for 15 minutes then call a doctor.

Lime - hydrated ($CaO-H_2O$) solid.

Lime is a white dry powder. It is the lightest powder of any material in the plant therefore, it is most inclined to cause dust problems when handling it. Always wear a respirator with dust filters, goggles, gloves and coveralls. If spilled on the skin rinse it off as soon as you can. In case of eye contact, rinse with water for 15 minutes then call a doctor.

Alum ($Al_2(SO_4)3$)

Alum is a grey, granular powder. This chemical also creates a lot of dust. Always wear a respirator with dust filters, goggles, gloves and coveralls. If alum is spilled on skin rinse it off as soon as you can - for eye contact rinse with water at once for 15 minutes then call a doctor.

HAZARDOUS MATERIALS INFORMATION GUIDE

FOR PLANT EMPLOYEES

CHEMICAL PROCESSORS, INC. PIER 91

INCOMING WASTE WATER

Part III of a V part safety program

for plant employees

PART III

INCOMING WASTE WATER

The Chempro Pier 91 facility recieves a variety of waste water types from regular and not so regular accounts. Because each incoming load may be different from the next we have a series of quick chemical tests we run on each load. These tests are designed to detect phenol, chrome 6, and to determine p H . In addition, each operator will be trained to notice extraordinary characteristics of any incoming load. For example, a strong odor, bright color, sludge, sewer solids, smell of gasoline, etc., should be reported to a supervisor befor off-loading.

We test each load for phenol and chrome 6 because they are toxic chemicals and they can contaminate our water tanks. Because they are toxic, opreators should use caution when handling them.

PHENOL:

If phenol is detected in any incoming load that load must be further examined by the plant manager or plant chemist. If the phenol concentration is high enough it will be treated seperately from other waste water.
Phenol is very toxic to people. Ingestion of 1.5 grams can be fatalbut it can also be absorbed through the skin. If phenol is spilled on the skin it must be washed off at once. Contaminated colthing must be taken off and cleaned. When handling phenol wear rubber boots, gloves, and coveralls.

CHROME 6:

If chrome 6 is detected in any incoming load it must be treated before entering a waste water tank or the primary seperator. Contact the plant manager or plant chemist for futher evaluation.
Chrome 6 is toxic to people. It can cause cancer of the lungs, nose, stomach, and larynx. If it is spilled on the skin it must be washed off at once. Contaminated clothing should be taken off and cleaned. Wear rubber boots, gloves, and coveralls when handling chrome 6. Wear an organic filter respirator when exposed to chrome 6 mists.